

Karen B. Possner
Executive Director
Legislative & Regulatory Policy

EX PARTE OR LATE FILED

Suite 900
1133-21st Street, N.W.
Washington, D.C. 20036-3351
202 463-4160
202 463-4637 (fax)
Internet: possner.karen@bsc.bls.com

January 30, 1997

Ex Parte

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W. - Room 222
Washington, D.C. 20554

*Re: GN Docket No. 96-228, Amendment of the Commission's Rules to Establish Part 27,
the Wireless Communications Service (WCS)*

Dear Mr. Caton:

This letter and its attachments are provided for inclusion in the public record; they supplement a January 29, 1997 *ex parte* letter filed by the undersigned.

Yesterday, representatives of BellSouth Corporation met with Julius Genachowski of the Chairman's office and Richard Smith, Charles Iseman and Tom Mooring of the Office of Engineering and Technology to discuss our concerns about the forthcoming 2.3 GHz auction.

In addition to discussing BellSouth's interest in utilizing spectrum in the 2.3 GHz range for the provision of wireless cable service, we highlighted concerns about the potential for interference to existing MMDS and ITFS operations from potential uses of the 2.3 GHz band. We specifically urged the Commission to take appropriate steps to protect existing service providers (e.g., MMDS and ITFS operations at 2.1 GHz and 2.5 GHz) from any interference resulting from any uses of the spectrum to be auctioned.

The two attachments to this letter discuss this matter in greater detail. The first is by Bob Saunders, Director - Wireless Planning for BellSouth Interactive Media Services. His statement responds more fully to questions raised yesterday by OET staff. The second is a 1/30/97 letter from John M. Wachsman, Vice President - Marketing for Pacific Monolithics, a manufacturer of wireless communications equipment, to Mr. Saunders. Mr. Wachsman's letter addresses BellSouth's interference concerns as well as questions raised by the OET staff.

No. of Copies rec'd
List ABCDE

0+1

Please direct any questions regarding this matter to the undersigned.

Sincerely,

A handwritten signature in cursive script, appearing to read "Carl B. ...", with a long horizontal line extending to the right. A diagonal line is drawn across the signature from the top left.

Attachments

cc: Chairman Hundt
Commissioner Chong
Commissioner Ness
Commissioner Quello
Michele Farquhar
Richard Smith
Roy Stewart
Karen Brinkmann
Jonathan Cohen
Chuck Dziedzic
Kathleen Ham
Charles Iseman
Barbara Kreisman
Keith Larson
Tom Mooring
Nazifa Naim
Ron Netro
Dave Pollak
Tom Stanley
David Wye

Statement of Robert A. Saunders
Director of Wireless Planning
BellSouth Interactive Media Services, Inc.
January 30, 1997
Re: GN Docket No. 96-228

My name is Bob Saunders. I work as Director of Wireless Planning of BellSouth Interactive Media Services. Following are my comments:

The soon to be auctioned 15 MHz blocks in the 2.3 GHz Spectrum are of interest to BellSouth to augment our wireless cable service. A 2000W EIRP limit would be required to integrate 6 MHz channels, within the 15MHz blocks, into our wireless cable service.

However, a significant problem exists which may severely impact our plans, as well as, the current one million wireless subscriber base. MDS channels are assigned in the 2.1 GHz band. ITFS and MMDS channels are assigned from 2.5GHz to 2.7 GHz. All of these channels are used for wireless cable services today.

The receiver/downconverter at each customer's home is an inexpensive broadband device. The antenna/cable/receiver/downconverter is an effective system at 2.3 GHz.

My research from two vendors indicates that the saturation point of the front end of the receiver (1dB compression point) is in the - 6 to - 2 dBm range at the receiver input. Good engineering practices require at least 6 dB of head room below the compression point for reliable linear operation. Therefore, for our example, we have established the maximum allowable input to the receiver at - 12dBm.

We have assumed a fixed site or mobile base station could be located within 300 feet of a wireless cable customer's antenna/receiver. A 20W transmitter would produce a 43 dBm EIRP signal.

$$\begin{aligned}\text{EIRP (dBm)} &= 10 \log (P \text{ watts}) + 30 \\ &= 10 \log (20 \text{ watts}) + 30 \\ &= 43\text{dBm}\end{aligned}$$

The free air space attenuation in 300 feet at 2.3 GHz is - 78.9 dB.

$$\begin{aligned}\text{Free Air Space Attenuation} &= 96.6 + 20 \log (d \text{ miles}) + 20 \log (f\text{GHz}) \\ &= 96.6 + 20 \log (300/5280) + 20 \log (2.3) \\ &= 78.9 \text{ dB}\end{aligned}$$

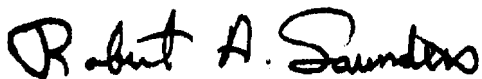
The receive site antenna gain is 24 dBi. The resulting receiver input would be as follows:

$$\begin{aligned}\text{Receiver input} &= 43\text{dBm EIRP} - 78.9\text{dB} + 24\text{dB} \\ &= - 11.9 \text{ dBm or rounded off to } - 12 \text{ dBm}\end{aligned}$$

Therefore, unless the 2.3 GHz license holder obtains an interference consent agreement from the existing MMDS and ITFS license holders, we recommend a power limit for fixed and mobile WCS use of 20W to provide sufficient headroom (6dB) for existing MMDS and ITFS users.

We have attached a letter from John M. Wachsman, Vice President, Marketing, Pacific Monolithics in support of this issue.

Signed,

A handwritten signature in black ink, appearing to read "Robert A. Saunders". The signature is fluid and cursive, with the first name "Robert" being more prominent than the last name "Saunders".

Robert A. Saunders



Solutions For Wireless Communications

January 30, 1997

Mr. Robert Saunders
Director for Wireless Planning
Bell South Interactive Media Services
1100 Abernathy Rd N.E.
500 Northpark Town Center
Suite 420
Atlanta, Georgia 30328

via facsimile (770) 673-2891

Dear Mr. Saunders :

This letter outlines Pacific Monolithics' concern of potential interference of the new Wireless Communication Services at 2305-2320 MHz and 2345-2360 MHz with existing MMDS receive installations.

The majority of existing MMDS receive sites have basically open front-ends. High sensitivity receivers increased coverage and allowed an operator to minimize the size of the antenna. There is a small percentage of installations have improved pre-selection to solve specific fixed point interferers. These interferers include radar around 1.3 and 2.75 GHz. These cases are localized based on the applications.

The difficulty from the WCS band is that the EIRP is undefined and the potential for a cellular architecture is quite high. The application will not be localized and will impact a high percentage of the existing MMDS installations.

An example is included for clarity.

Assumptions :

Input 1 dB compression point of MMDS receiver input stage = - 6 dBm
Gain of MMDS receive site antenna (Gant) = 24 dBi
Distance from WCS transmitter = 100 yds

What is the maximum EIRP of the WCS transmitter without compressing this installation ?

$EIRP - \text{path loss} + G_{ant} \leq - 6 \text{ dBm}$

$$\begin{aligned} EIRP_{max} &= - 6 + (20 \log (100/1760) + 20 \log (2305) + 36.8) - 24 \\ &= - 6 + (-24.91 + 67.25 + 36.8) - 24 \\ &= 49 \text{ dBm} \\ &= 80 \text{ W} \end{aligned}$$

WCS EIRP levels of greater than 80 W will begin to compress the input amplifier stage. Since video is an amplitude modulated signal it is important to remain in the linear range of the receiver. Good engineering practice requires the input power to be 6 to 10 dB below the compression region. This would limit the WCS EIRP to 8 to 20 W. The estimated cost to retrofit the existing install base is estimated to be \$75M to \$125M for equipment alone. This is based on upgrading the install base (approx. 1M subscribers) with pre-selected downconverters and increasing the antenna gain to increase the loss in sensitivity.

If you have any questions or need additional information please call me at (408) 745-2810 or fax me at (408) 734-2656.

Sincerely,
Pacific Monolithics, Inc.



John M. Wachsman
Vice President, Marketing